

FAR 23 LOADS is copyrighted by McGettrick Structural Engineering, Inc. It provides a procedure to calculate the loads on an airplane according to the Code of Federal Regulations, Title 14 – Aeronautics and Space, Chapter I – Federal Aviation Administration, Subchapter C – Aircraft, Part 23 – Airworthiness Standards, Normal, Utility, Acrobatic and Commuter Category Airplanes, Subpart C – Structures.

Qutput Utilities Help		
Weight Estimation Name and model of your airplane:	& PLACE SINGLE ENGINE GENERAL AVIATION AIRPLANE	
How many engines:		
Total maximum HP of engines:	265	
How many seats:		
Total baggage weight (Lbs)		
Hours of your airplane to fly on full tanks		
Is airplane pressurized	ND	
Type of engine	4 CYCLE RECIPROCAL	الال
	MAX FLAP DEFLECTION = 40.000 DEG	
	RATIO OF FLAP CHORD TO WING CHORD = 0.258	
	MAX HP OF ONE ENGINE = 250,000	
	BUTT LINE OF ENGINE = 0.000	
	FRONTAL AREA OF FUSELAGE = 8.200 SQ FT	
	PROPELLER DIAMETER = 84.000 INCHES	
	OUTPUT	
	1G STALL 2G STALL 2G AT VF 1.9G GUST AT VF	
	CLF 1.715 1.715 1.574 1.563	
	CLW 1.586 1.586 0.979 0.930 LF 214.044 428.088 636.496 631.898	
	Lz 214.044 428.088 636.496 631.898	
	CRITICAL FLAP LOAD PER FAR 23.345(a) = 636.496 LBS	
	CHORDWISE DISTRIBUTION TAPERS FROM THE LEADING EDGE TO THE TRAILING EDGE.	
	THE PRESSURE AT THE TRAILING EDGE IS HALF THE PRESSURE AT THE LEADING EDGE. THE PRESSURE AT THE LEADING EDGE IS = 0.550 PSI	
	OUTBOARD BL OF SLIPSTREAM = 44.699 SLIPSTREAM VELOCITY AT FLAP = 125.692 KNOTS	
	INCREASE FLAP LOAD IN SLIPSTREAM AT VF BY FACTOR = 1.420	
	PER FAR 23.345(C)(2) AND FAR 23.345(e)	
	INCREASE FLAP LOAD AT VF BY FACTOR OF 1.301	
	INCREASE FLAP LOAD AT VF BY FACTOR OF 1.301 CRITICAL FLAP LOAD COMBINED WITH MORIZONTAL GUST = 827.946 LBS FER FAR 23.345(8) (1) AND FAR 23.345(8) FOR HORIZONTAL 25 FFS GUST	

The loads on the airplane are determined by (1) the three view drawing, (2) the chosen maximum takeoff weight, (3) the chosen category and load factor. The software calculates the loads using methods acceptable to the FAA and actually recommended in the previous CAR3/CAM4 and FAR 23/FAR 25 regulations. Previous versions of this software has been used as a reference by hundreds of individuals and companies in over 40 countries. It has been licensed to the FAA.

🔽 C:\Program Files (x86)\Far23Loads\data\6-place\6-place.far						
Eile Utilities Help						
FAR 23 LOADS INTEGRATED PROGRAM: SELECT A MODULE TO RUN						
Weight & <u>C</u> G	Envelope of Loads	<u>G</u> eometry				
Mach Limitations	Aero Coefficients	Flight Loads				
Tail Load Distribution	<u>A</u> ir Loads	Wing Ine <u>r</u> tia				
Aileron <u>L</u> oads	Flap Loads	<u>I</u> ab Loads				
1 Engine O <u>u</u> t Loads	Landing Load Factor	Landing Loads				
	NTEGRATED PROG Weight & CG Mach Limitations Tail Load Distribution Aileron Loads	MTEGRATED PROGRAM: SELECT A MO Weight & CG Envelope of Loads Mach Limitations Aero Coefficients Tail Load Distribution Air Loads Aileron Loads Flap Loads				

Type Certification

This software provides the means to calculate and print a loads report, including compressibility and altitude effects, for FAA Type Certification.

Supplemental Type Certification

Strength substantiation is required for most Supplemental Type Certifications (STCs) for changes to Type Certificated airplanes. The original loads report for certification are proprietary information and not available to persons making changes to type certificated airplanes. Users of previous versions of this software have received approval for STCs.

Experimental or Kit Airplanes

The loads on experimental home built airplanes, kit planes or ultra light airplanes should be calculated for flight safety. Weight may be reduced with stress analysis or testing only after calculating accurate loads. Although there are no FAR certification requirements for loads and strength analysis for this category in the US, there should be great concern for flight safety in this freedom from regulation.



I	💌 FLIGHT LOADS	
	Ele Output Utilities Help	
l	General Speed & Alt Enroute Info Cruise Coef Cruise CG Landing Coef Landing CG	
I	Enter S (Wing Area, Sq-Ft) 184.121 FS of 25% MAC of tail	261.027
l	Enter Wing MAC (Inch) 69.246 FS of 50% MAC of tail	270.356
l	Aspect ratio of wing 6.095 Aspect ratio of horizontal tail	4.017
l	Enter XW (Fus Sta 25 Percent MAC Wing) 80.953 Incidence of horiz. tail, WL to chord (Deg)	2
I	Enter ZW (Waterline 25 Percent MAC Wing) 87.725 Sweep (DEG)	0
I	Elevator area (Total LH+RH) (Sq-Ft) 16.409 Aero Coefficient Mach number (usually ab	out 0.1) 0.1
l	Horizontal tail area (Sq-Ft) 36.95 Ignore Pitch Due to Drag?	NO V
l	Minimum Load Factor	
I	Aircraft Category NORMAL	
I	Maximum Weight 3400	
I	The load factor for this airplane is set to: 3.800	Set Load Factor
L	The FAR calculated minimum load factor for this airplane is: 3.800	
I		
I		
L		

The computer aided engineering approach can produce a reasonably complete airplane loads report. The program is based on the Federal Aviation Regulations, text references in the industry and years of experience in the certification process of FAR 23 airplanes.

FAR 23 LOADS Consists of 20 Modules

- Weight Estimation
- Envelope of Loads
- Structural Speeds
- Aero Coefficients
- Select Critical Loads
- Air Loads
- Net Loads
- Flap Loads
- Engine Mount Loads
- Landing Load Factor

- Weight & CG
- Geometry
- Mach Limitations
- Flight Loads
- Tail Load Distribution
- Wing Inertia
- Aileron Loads
- Tab Loads
- One Engine Out Loads
- Landing Loads



- FAA-supported re-development effort
- Modules are fully integrated, single database
- Modules can be run as stand-alone applications
- Program includes theoretical documentation and user interface guide with two airplane examples

